

CLAIMS

What is claimed is:

- 1           1.    A method for automatic gain control, comprising:  
2           taking a plurality of samples of received signal;  
3           calculating power for each of said plurality of  
4   samples of the received signal;  
5           computing an average value of said calculated powers  
6   for said plurality of samples; and  
7           generating an appropriate feedback signal based on  
8   said computed average value.
- 1           2.    The method of claim 1, wherein said computing an  
2   average value includes selectively eliminating any sample  
3   above a pre-specified threshold value.
- 1           3.    The method of claim 2, wherein said pre-specified  
2   threshold value includes a value that is three time a  
3   standard deviation of samples of the received signal.
- 1           4.    The method of claim 1, wherein said taking a  
2   plurality of samples of received signal includes:  
3           receiving an in-phase component and a quadrature-phase  
4   component of the received signal; and  
5           sampling the in-phase component and the quadrature-  
6   phase component of the received signal.

1           5.    The method of claim 4, wherein calculating the  
2 power for each of said plurality of samples includes:  
3           first calculating a square of the sampled in-phase  
4 component;  
5           second calculating a square of the sampled quadrature-  
6 phase component; and  
7           third calculating a sum of the square of the sampled  
8 in-phase component and the square of the sampled  
9 quadrature-phase component.

1           6.    The method of claim 1, wherein said generating  
2 includes differencing said average value and a pre-  
3 specified setpoint.

1           7.    The method of claim 6, further comprising:  
2 controlling the loop gain of a feedback signal.

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1 8. An automatic gain control system, comprising:  
2 a sampling element to take multiple samples of  
3 received signal;  
4 a power calculator arranged to compute power of each  
5 of said multiple samples;  
6 an averaging element arranged to produce an output  
7 that reduces the impact of samples with power level  
8 substantially higher than an average power in generation of  
9 a feedback gain control signal; and  
10 a feedback signal generator to generate the feedback  
11 gain control signal based on said output of said averaging  
12 element.

1 9. The system of claim 8, wherein said output of  
2 said averaging element is an average value of said multiple  
3 samples.

1 10. The system of claim 8, wherein said output of  
2 said averaging element is a value that is an average of  
3 said multiple samples after selectively eliminating samples  
4 that are greater than three time the standard deviation of  
5 samples in the received signal.

1 11. The system of claim 8, wherein said feedback  
2 signal generator includes an adder to determine the  
3 difference between the output of said averaging element and  
4 a pre-specified setpoint.

1 12. The system of claim 11, further comprising an  
2 amplifier to control a loop gain.

1 13. The system of claim 12, further comprising an  
2 accumulator to generate the feedback gain control signal.

1 14. A system, comprising:  
2 an automatic gain control component; and  
3 an automatic gain control system to provide functions  
4 which enable the system to:  
5 take a plurality of samples of received signal,  
6 calculate power for each of said plurality of samples  
7 of the received signal,  
8 compute an average value of said calculated powers for  
9 said plurality of samples, and  
10 generate and send an appropriate feedback gain control  
11 signal to the automatic gain control component, based on  
12 said computed average value.

1 15. A telecommunication device, comprising:  
2 an antenna to receive and transmit RF signal;  
3 a transmitter; and  
4 a receiver including:  
5 an RF downconverter to downconvert the RF signal to an  
6 IF signal,  
7 an automatic gain control element to control gain of  
8 the receiver by controlling gain of the IF signal,  
9 an IF mixer to downconvert the IF signal to baseband  
10 signal,  
11 an analog-to-digital converter (ADC) to convert the  
12 analog baseband signal to digital signal, and  
13 an automatic gain control system providing a feedback  
14 gain control signal to the automatic gain control element  
15 based on power levels of said digital signal, said  
16 automatic gain control system operating to take multiple  
17 samples of said digital signal and averaging the power  
18 levels of said multiple samples to produce said feedback  
19 gain control signal.

1 16. The device of claim 15, wherein said automatic  
2 gain control system of said receiver includes a sampling  
3 element to take multiple samples.

1        17. The device of claim 16, further comprising an  
2 averaging element arranged to produce an output that  
3 reduces the impact of samples with power level  
4 substantially higher than an average power in generation of  
5 said feedback gain control signal.

1        18. The device of claim 17, wherein said output of  
2 said averaging element is an average value of said multiple  
3 samples.

1        19. The device of claim 17, wherein said output of  
2 said averaging element is a value that is an average of  
3 said multiple samples after selectively eliminating samples  
4 that are greater than three time the standard deviation of  
5 samples in the digital signal.